



Spring Flood Outlook 2022

NWS Quad Cities IA/IL

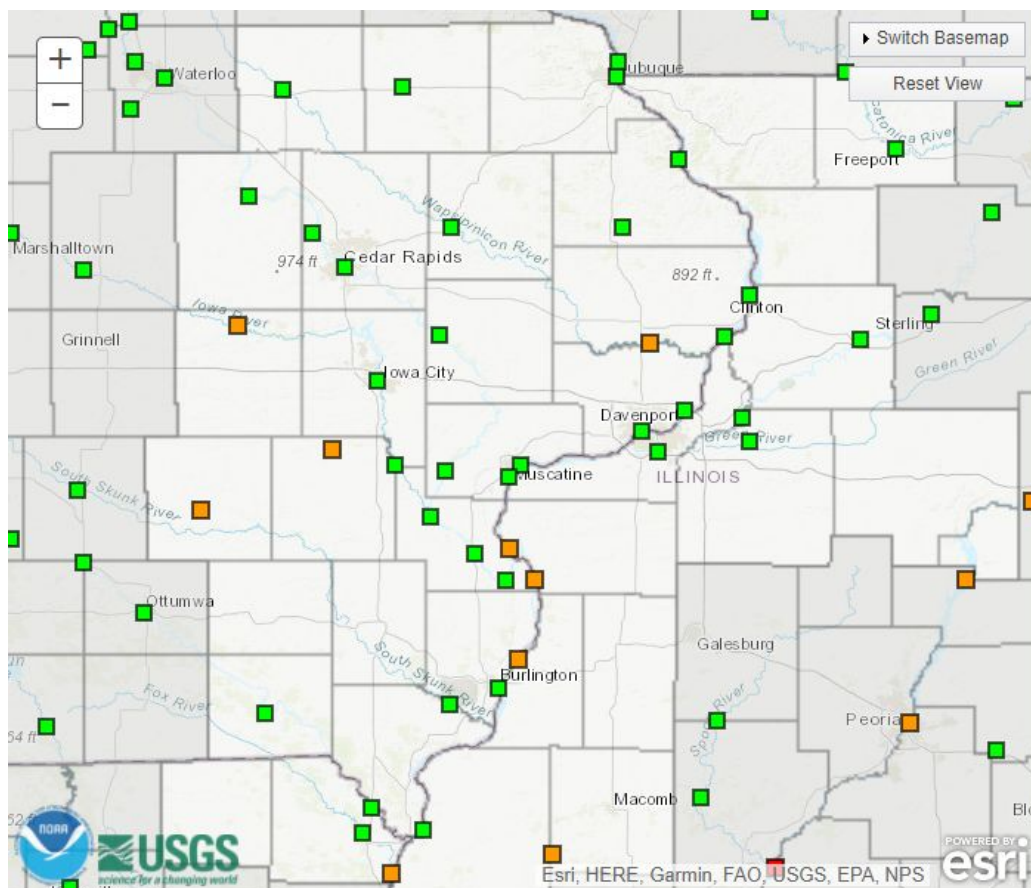
Thursday, February 10, 2022

Key Messages

- Near to below normal spring flood threat for the NWS Quad Cities service area.
- Future weather—including amount and timing of precipitation as well as rate of snowmelt—will be a big factor in any potential spring flood threat.

NEW Important Forecast Changes

- First briefing for the spring flood threat.



Map showing flood risk from February through April

Next Update The second spring flood outlook text product will be issued by NWS offices serving Iowa on February 24, 2022.





Factors Considered in this Outlook

2022 Spring Flood Outlook

Thursday, February 10, 2022

- **Seasonal Temperatures and Precipitation**
- **Snow Cover and Liquid Water Equivalent**
- **Frost Depth**
- **Soil Moisture**
- **Current River Streamflows**
- **Weather Forecasts and Outlooks**





Seasonal Temperatures/Precipitation

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Average Winter Temperatures:

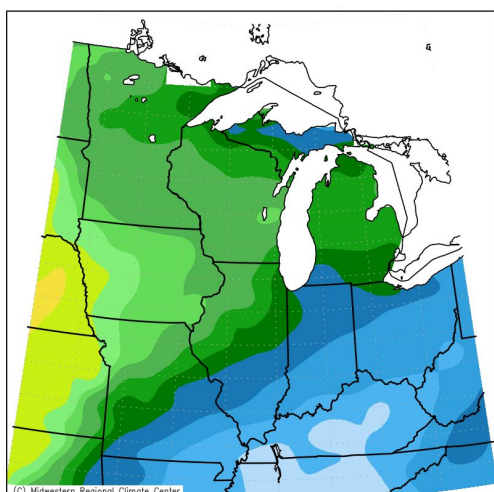
Near normal temperatures this winter. A few locations with averages 1-3 degrees above normal

Winter Precipitation:

- Locally – Below normal
- Upstream (Mississippi River watershed) – Above normal, especially in northern MN.

Seasonal Accumulated

Precipitation

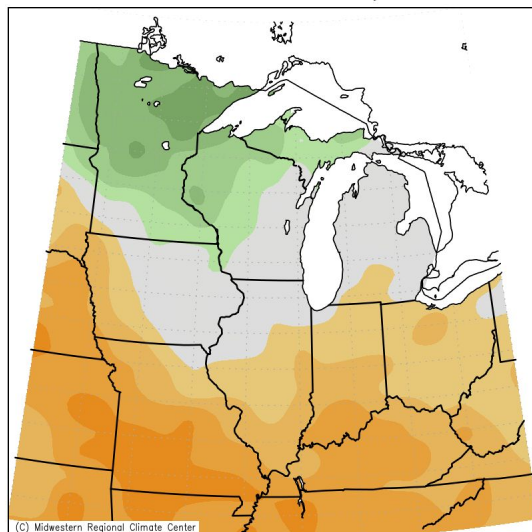


0.01 0.5 1.5 3 5 10 15
0.00 0.1 1 2 4 7.5 12.5 20

Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 2/10/2022 11:02:39 AM CST

Average Temperature Departure from Normal

Dec 1, 2021 – Feb 09, 2022

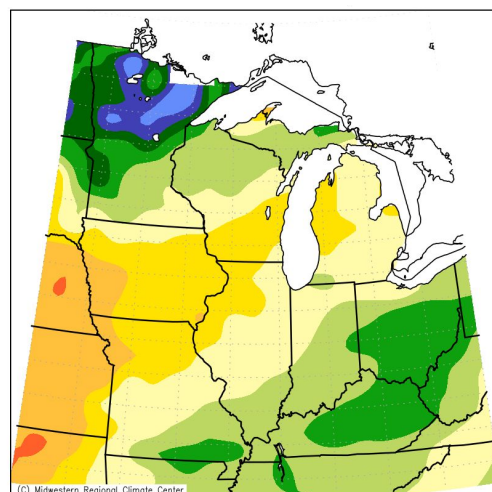


-6 -4 -2 0 2 4

Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 2/10/2022 4:24:43 AM CST

Accumulated Precipitation

Percent of Mean



10 25 50 75 100 125 150 175 200 300

Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 2/10/2022 4:27:34 AM CST



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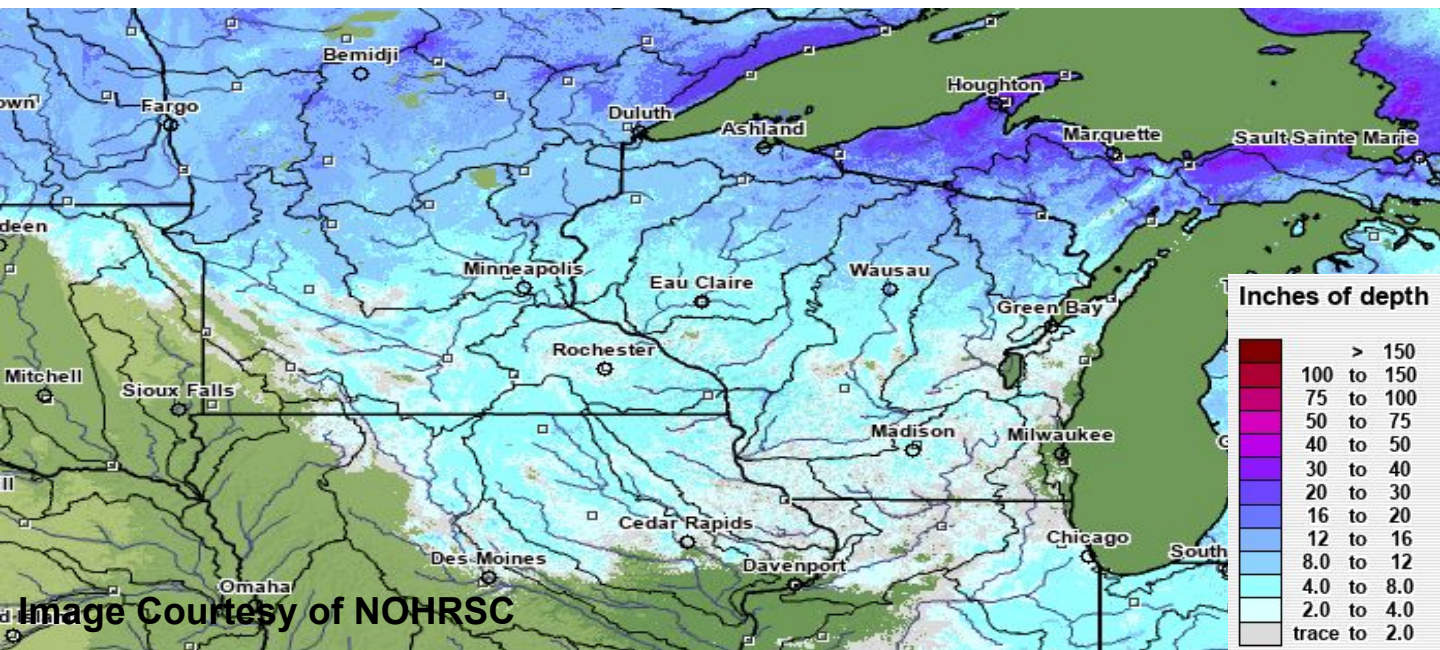


Snow Cover and Liquid Water Equivalent

2022 Spring Flood Outlook

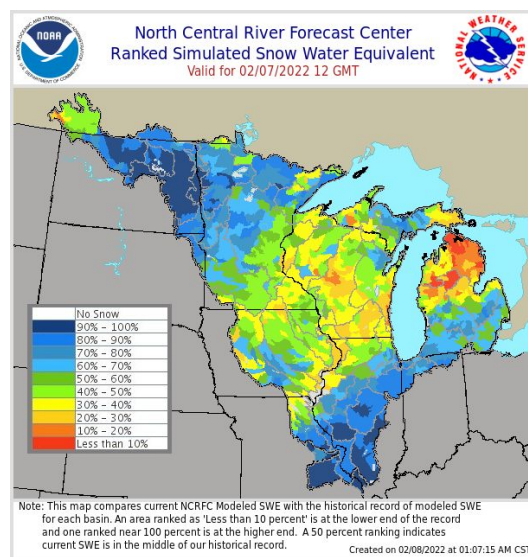
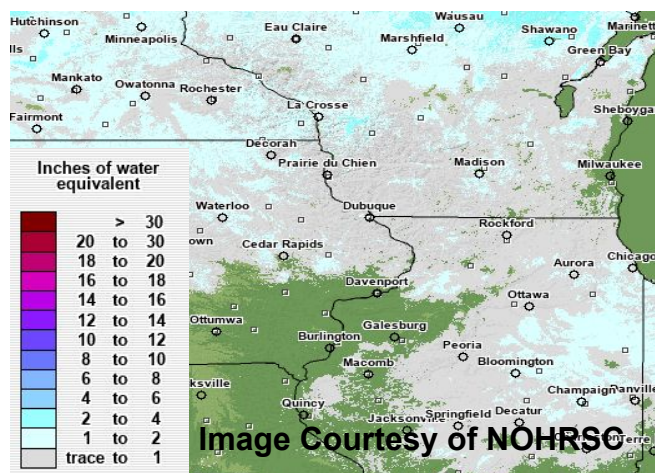
Thursday, February 10, 2022

Snow Cover (as of Feb 10, 2022)



Snow Water Equivalent (SWE) as of Feb 10, 2022:

- Widespread SWE of 1-2". Deepest snowpack has 2-4" of SWE in north



Contribution to flood potential:

- Snowmelt alone has a limited potential for flooding locally, due to below normal moisture content.





Snow Water Equivalent Change This Week

2022 Spring Flood Outlook

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72-Hour Snowmelt

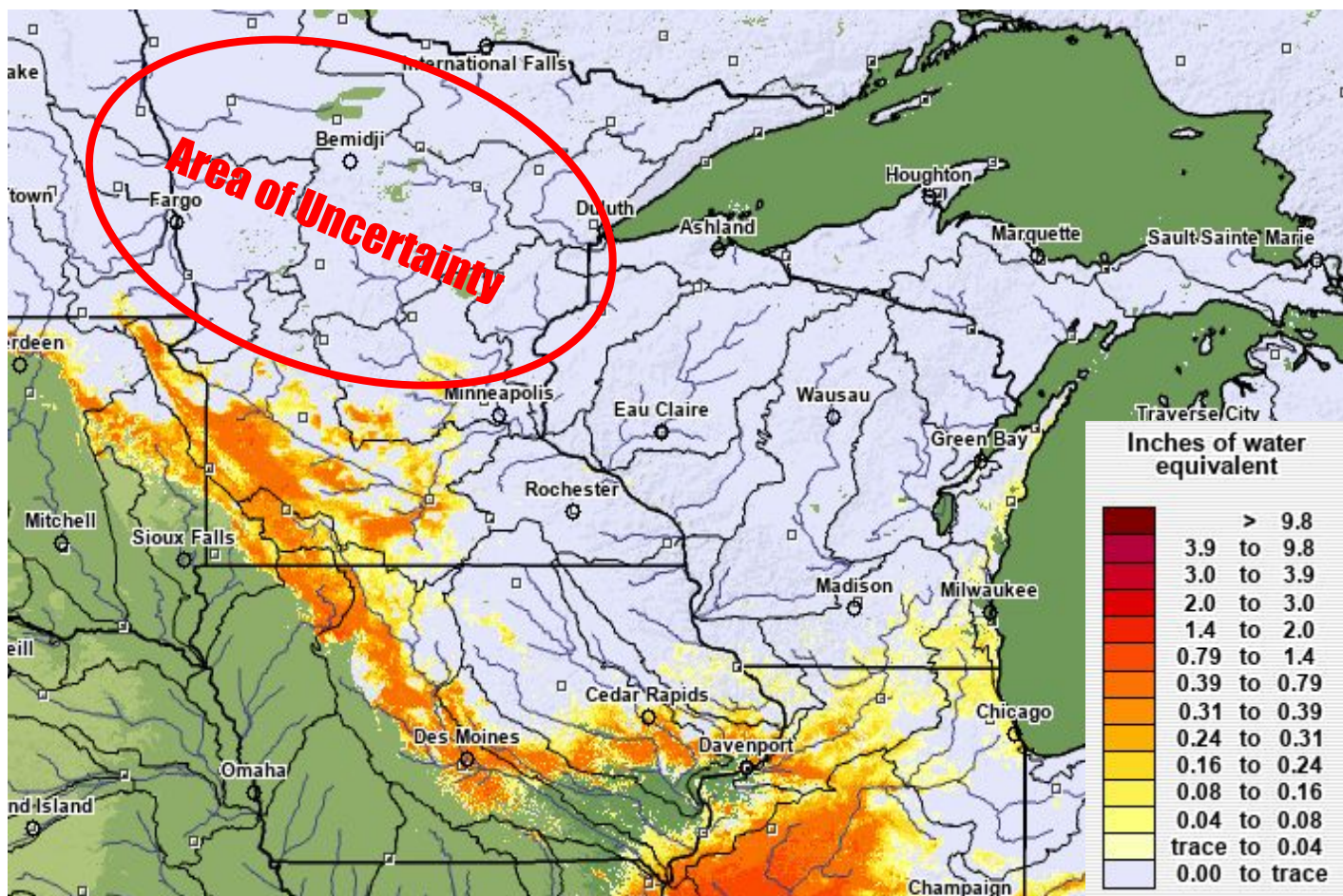


Image Courtesy of NOHRSC

Contribution to flood potential:

- With mild temperatures seen lately, we have started to see a large reduction in local snowpack. In the northwest, deep snowpack exists over frozen grounds, leading to impact uncertainty along the Mississippi River.
- With little snowpack remaining, not much flooding impact is currently expected. Any new snowfall can impact this in the future.



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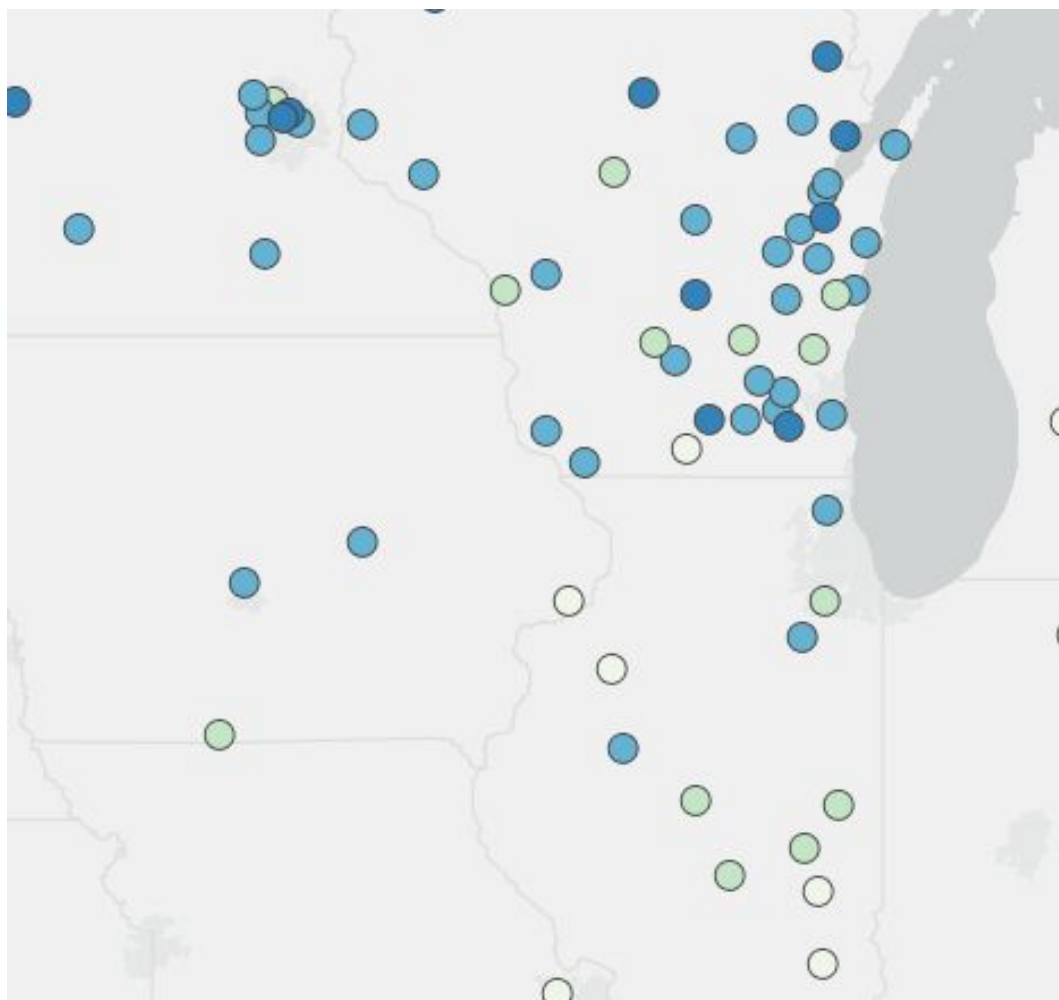
Frost Depth

2022 Spring Flood Outlook

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Frozen ground

- Frost depths are below normal locally and near normal elsewhere. Much deeper frost depth in northern Mississippi River Valley, ranging 10 to 25 inches for some.



Soil Frost Depth (Inches)

FrostDepth

- > 16 - 28
- > 12 - 16
- > 8 - 12
- > 3 - 8
- 0 - 3

Contribution to flood potential:

- Shallow frost locally has potential to thaw early in the season, allowing snowmelt and rain to infiltrate into the ground, limiting runoff. Elsewhere across the Mississippi basin, the impact on potential flooding is neutral.





Soil Moisture

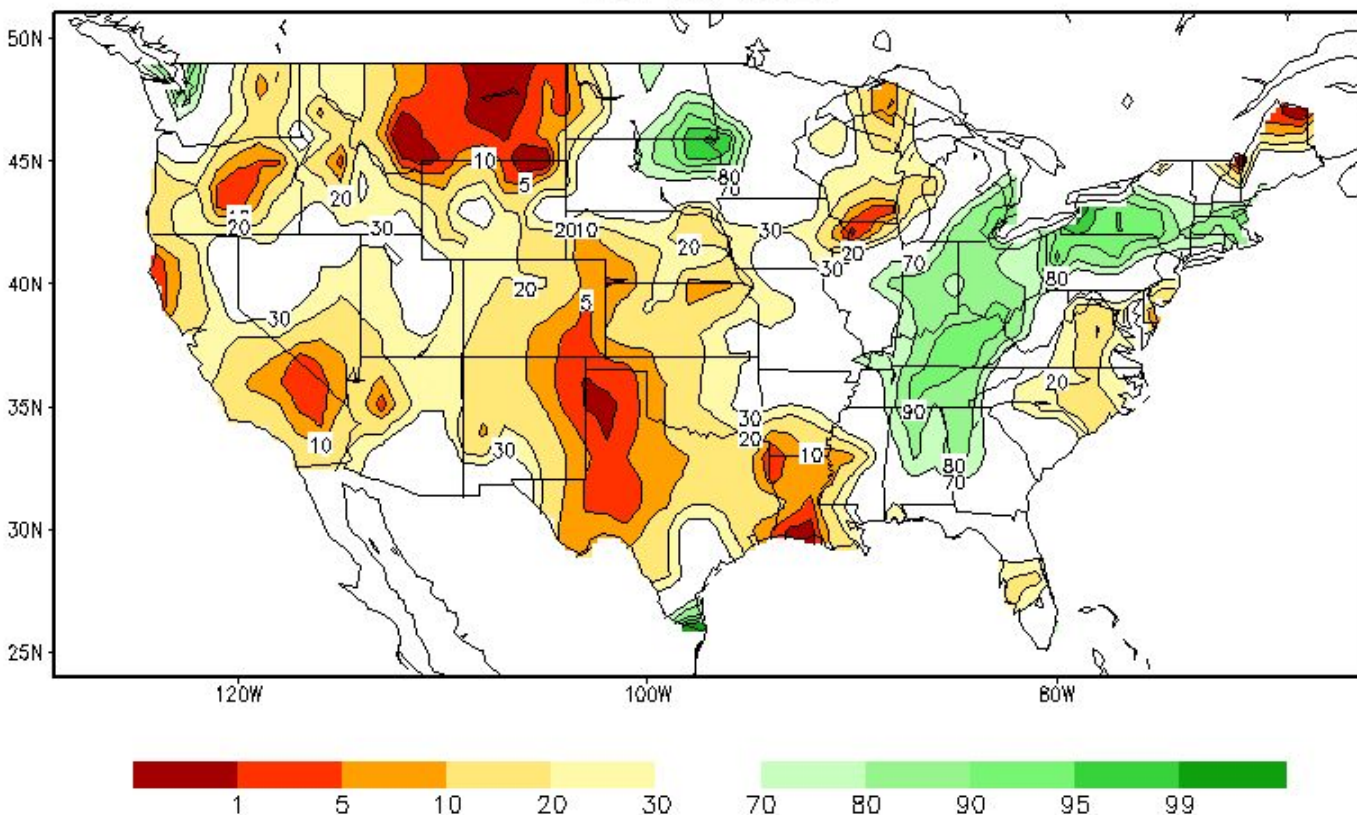
2022 Spring Flood Outlook

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Dryer Soils, with some under Moderate Drought Conditions:

- Near to below normal soil moisture locally.
- Regionally, soil moisture is near normal, with above normal conditions in the upper Mississippi River Valley and the dry area locally.

Calculated Soil Moisture Ranking Percentile
FEB 08, 2022



Contribution to flood potential:

- With the relatively dry soils, snowmelt or rainfall will have some capacity to infiltrate into the ground after the frost melts. Some areas may start to trend towards more saturation, due to increased snowmelt, which can lead to a lesser amount of infiltration. Although, a lighter snowpack may not have much of an impact.





Current Drought Conditions

2022 Spring Flood Outlook

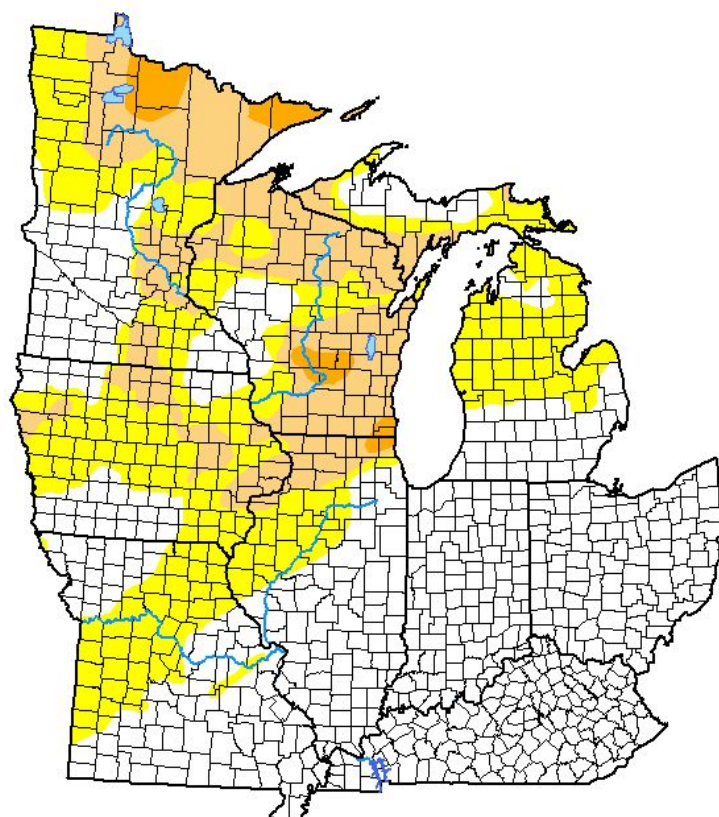
Thursday, February 10, 2022

Dryer Soils, with some under Moderate Drought Conditions:

- Locally, we are seeing abnormally dry to Moderate Drought conditions.

U.S. Drought Monitor Midwest

February 8, 2022
(Released Thursday, Feb. 10, 2022)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	54.94	45.06	18.39	1.97	0.00	0.00
Last Week 02-01-2022	56.80	43.20	16.62	1.97	0.00	0.00
3 Months Ago 11-09-2021	63.23	36.77	19.42	5.33	1.13	0.00
Start of Calendar Year 01-04-2022	63.32	36.68	15.25	2.41	0.00	0.00
Start of Water Year 09-28-2021	57.44	42.56	23.36	12.29	4.16	0.00
One Year Ago 02-09-2021	63.14	36.86	9.45	1.83	0.40	0.00

Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Deborah Bathke
National Drought Mitigation Center



droughtmonitor.unl.edu

Contribution to flood potential:

- With the abnormally dry conditions, snowmelt or rainfall will have some capacity to infiltrate into the ground after the frost melts. Some areas may start to trend towards more saturation, due to increased snowmelt, which can lead to a lesser amount of infiltration. These conditions have persisted for months now, with no big indication of change yet.



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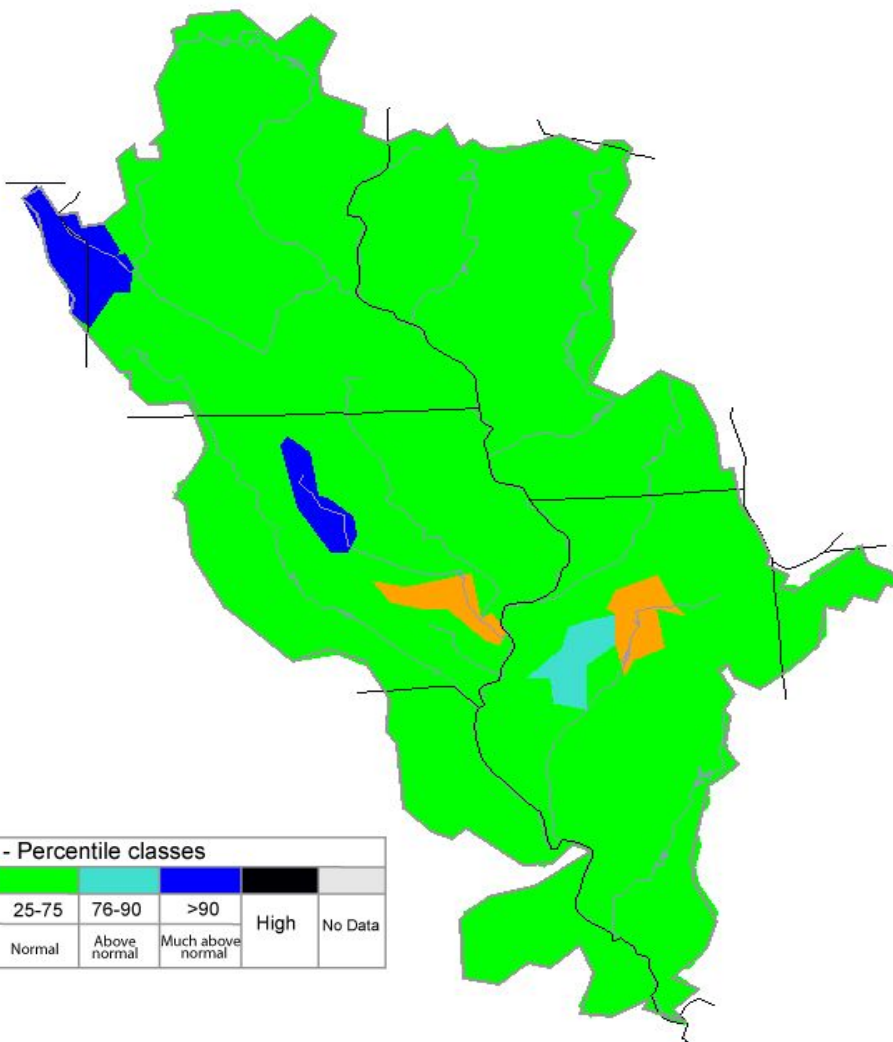
Streamflows

2022 Spring Flood Outlook

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Streamflows are generally near normal across IA, IL, and MO. This will help in the event of a heavy precipitation event in the future, as the rivers will be able to hold more water than if river levels were high.

Tuesday, February 08, 2022



Contribution to flood potential:

- Rivers near or below normal levels indicate there is capacity in the rivers for runoff from snowmelt water and spring rains.





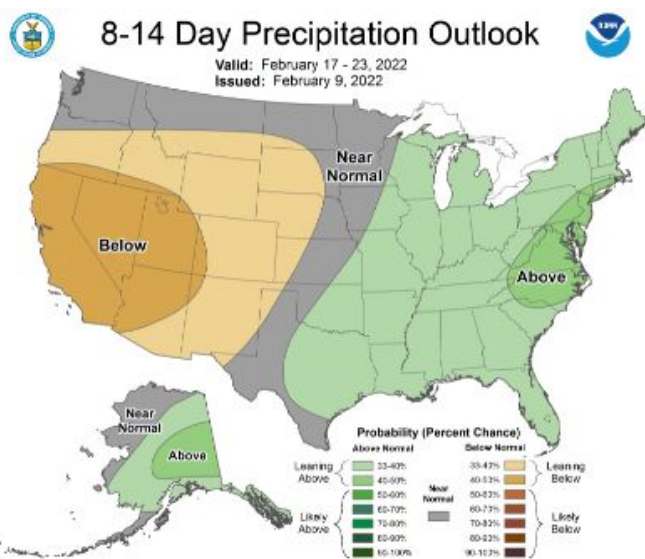
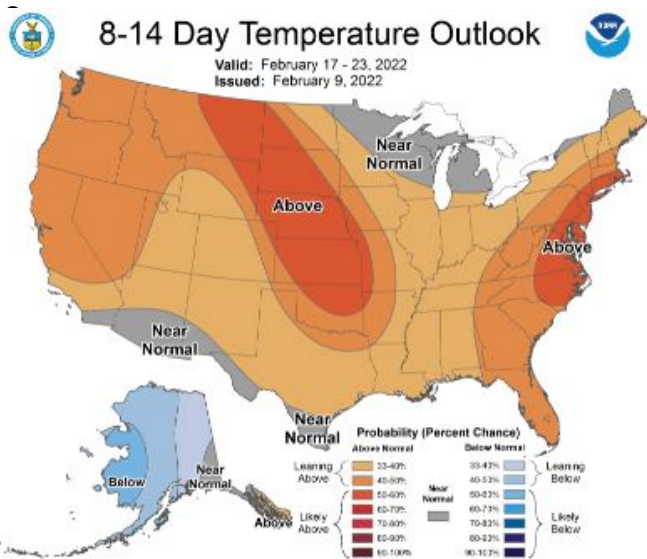
Weather Outlooks

2022 Spring Flood Outlook

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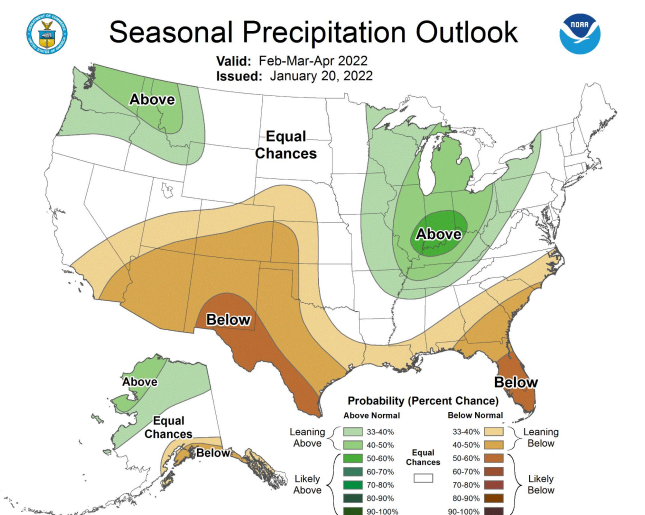
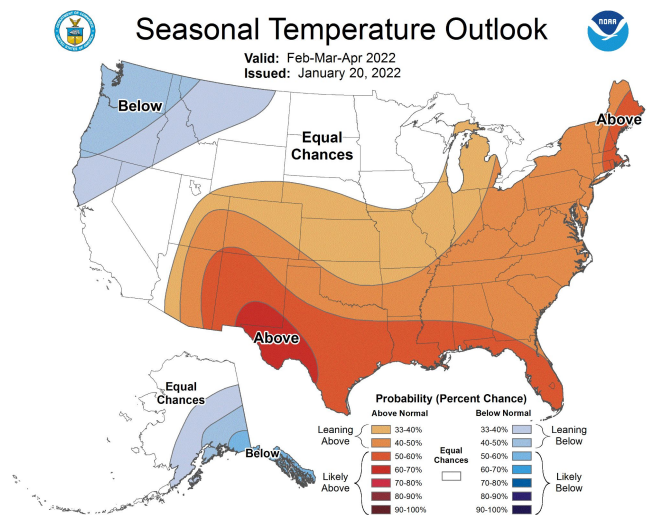
Week 2 Temperature and Precipitation Outlooks (2/17-2/23):

- Near normal temperatures and precipitation are expected, with slight chances for above normal. Otherwise, no big signals for temperature and precipitation.



February-April Outlook:

- Looking through April, there are low probabilities favoring above normal precipitation.





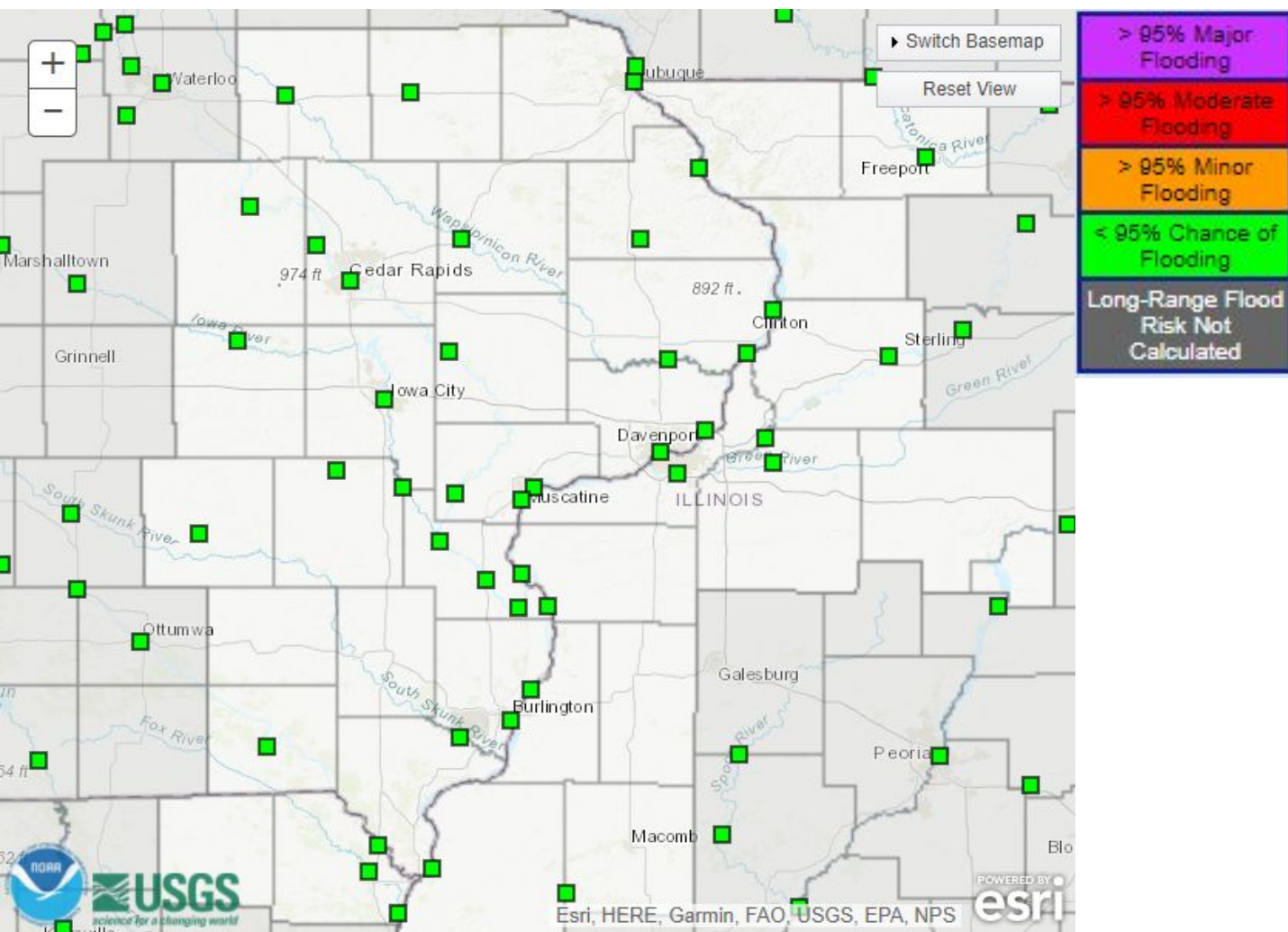
Forecast/Outlooks: High Probabilities

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No locations with high chances for flooding:

- Greater than 95% chance to reach the labeled flood stage



- High-end chances (>95%) are low all around at the moment. With continued snow melt and spring precipitation, these chances may fluctuate on future outlooks.





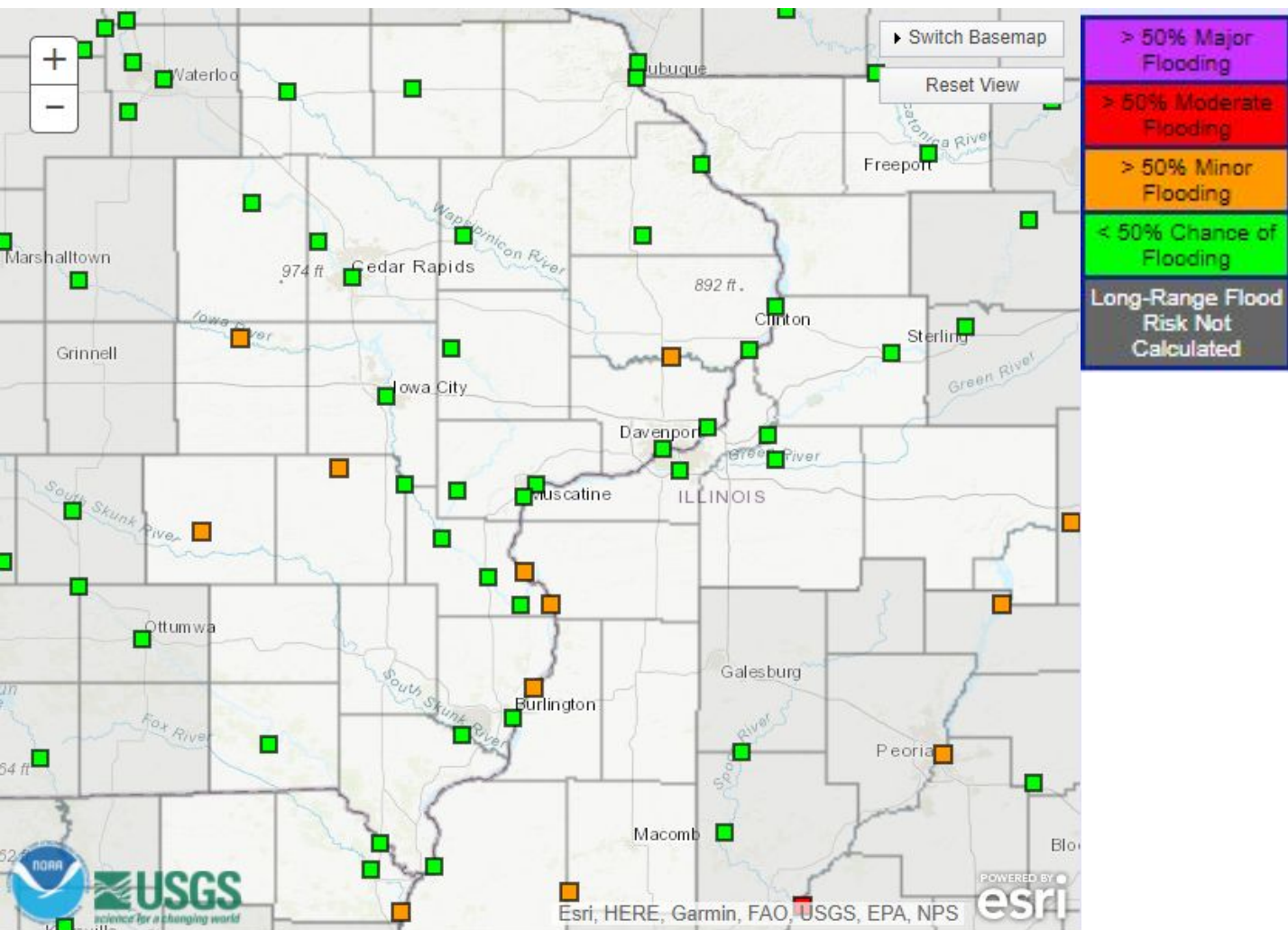
Forecast/Outlooks: 50% Chance

2022 Spring Flood Outlook

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Locations with chances for flooding:

- Greater than 50% chance to reach the labeled flood stage



- The Mississippi River will have a 50% or higher chance for reaching minor flood stage, generally downstream of the Quad Cities.
- A number of the local rivers have greater than a 50% probability of reaching minor flooding.





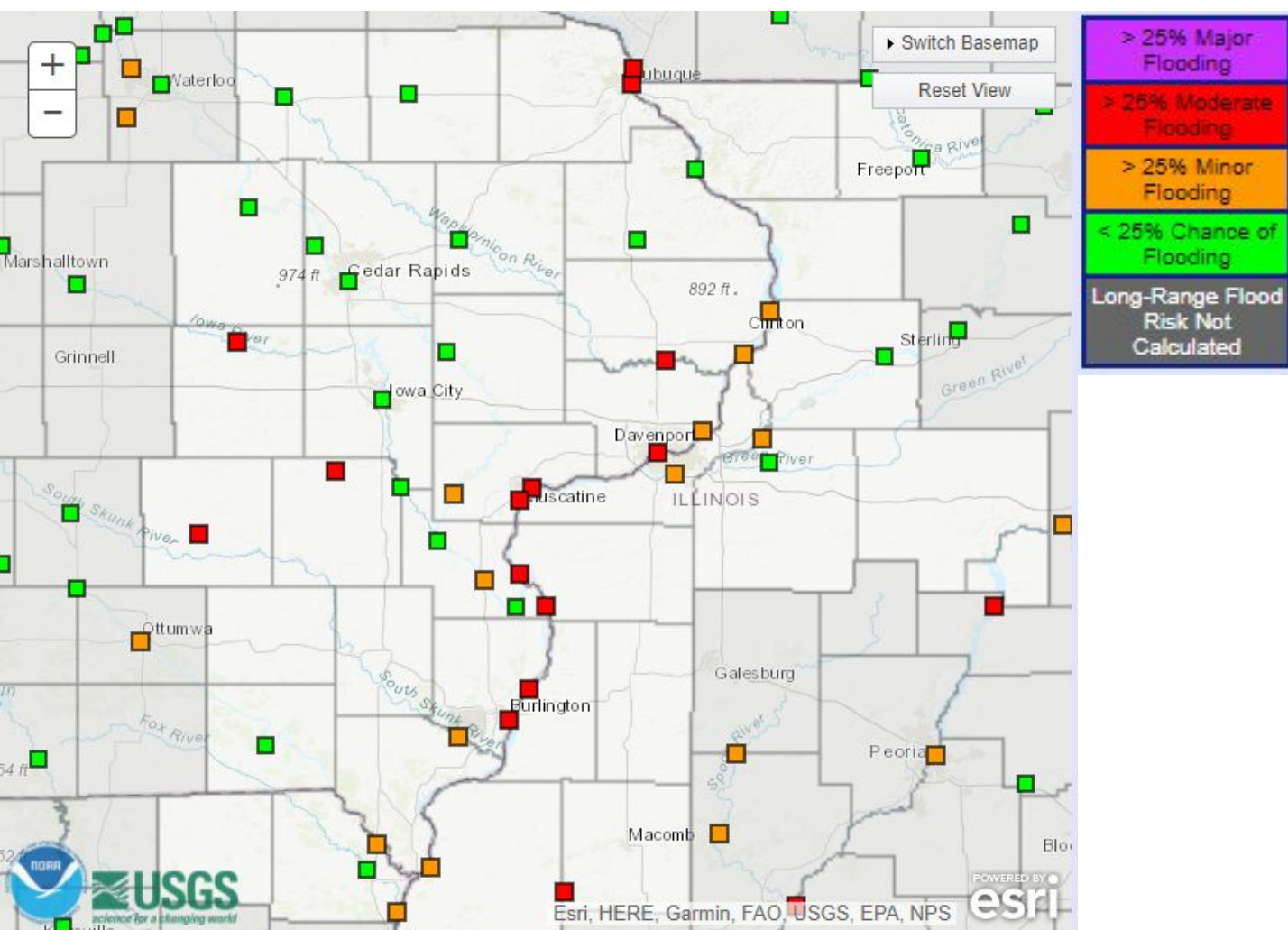
Forecast/Outlooks: Lower Probabilities

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Locations with chances for flooding:

- Greater than 25% chance to reach the labeled flood stage



- This graphic shows that the many rivers in the local area have at least a small (25%) chance of reaching flood stage, with several showing at least a low probability of rising to minor to moderate flood levels.





Comparison To Normal

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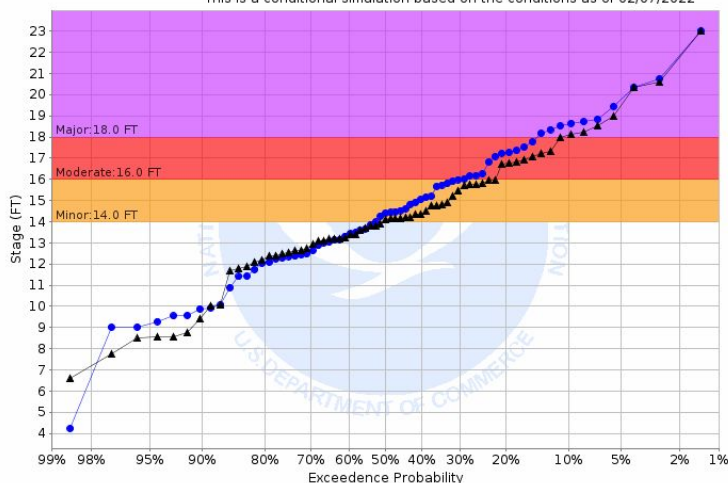
How far outside of normal is the flood risk?

Closer the lines are together the closer to normal the flood threat is.

▲ Conditional Simulation
● Historical Simulation

Example of higher risk location (but still near normal risk): English River near Kalona

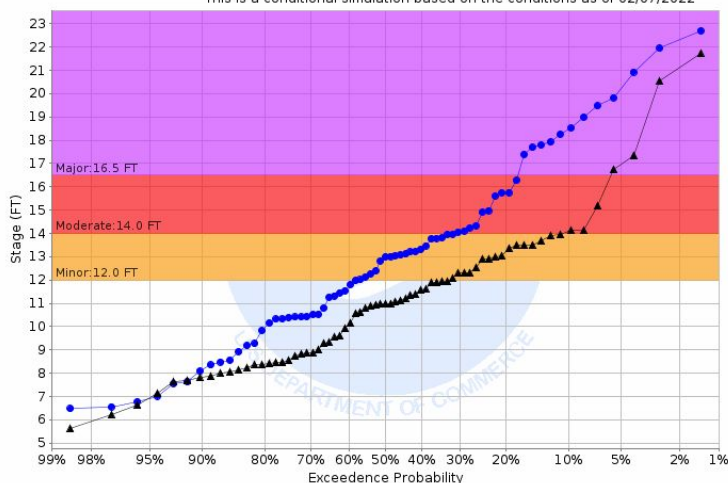
Chance of Exceeding River Stage at English River at Kalona 1SSW (KALI4)
Forecast for the period 02/14/2022 - 05/15/2022
This is a conditional simulation based on the conditions as of 02/07/2022



This graphic shows the probability of the English River reaching Minor Flood stage this year is around 51%. In a normal year, the chance is 53%..

Example of lower risk locations - most local rivers: Rock River near Joslin

Chance of Exceeding River Stage at Rock River at Joslin (JOSI2)
Forecast for the period 02/14/2022 - 05/15/2022
This is a conditional simulation based on the conditions as of 02/07/2022



For the Rock River near Joslien the risk for reaching Moderate Flood Stage (14 ft) this year is 11%. In a normal year, there is a 31% chance of reaching 14 ft. .





Probabilistic Outlook Information

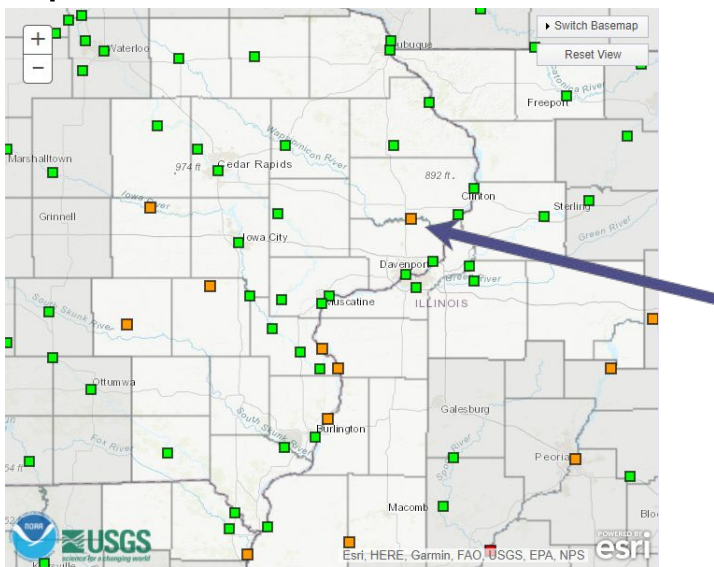
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Where to find the information:

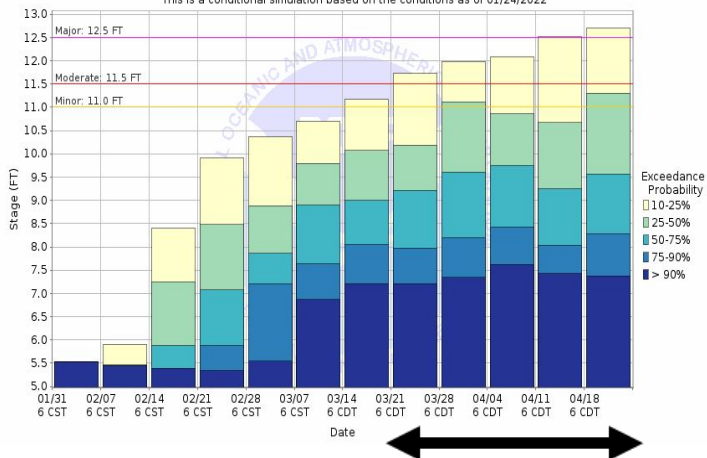
https://water.weather.gov/ahps2/long_range.php?wfo=dvn

- To see the graphs, choose a location from the map.



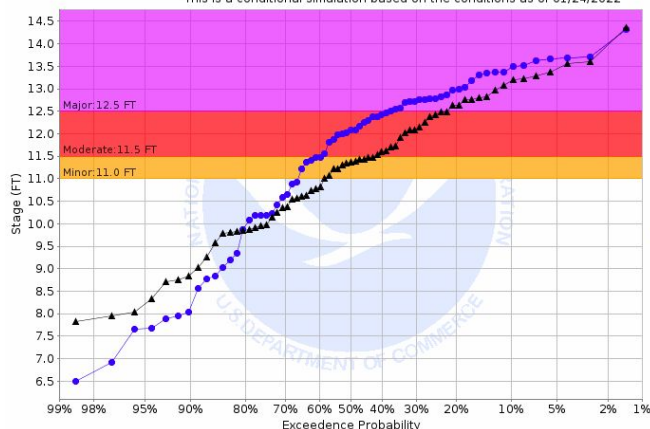
- Choosing the Probability Information Tab will get you to the graphical analysis of the probabilities.

Weekly Chance of Exceeding River Stage at Wapsipicon River at De Witt 4S (DEW4)
Forecast for the period 01/31/2022 - 05/01/2022
This is a conditional simulation based on the conditions as of 01/24/2022



This graph shows the most likely timing of high river levels.

Chance of Exceeding River Stage at Wapsipicon River at De Witt 4S (DEW4)
Forecast for the period 01/31/2022 - 05/01/2022
This is a conditional simulation based on the conditions as of 01/24/2022



This graph shows the probability compared to normal of reaching particular river levels through the entire 3 month period.





Information Sources

2022 Spring Flood Outlook

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- Quad Cities WFO Forecast Discussions (technical weather and hydrology discussion) - forecast.weather.gov/product.php?site=DVN&issuedby=DVN&product=AFD
- Advanced Hydrological Prediction Service (AHPS) – water.weather.gov/ahps
- North Central River Forecast Center – www.weather.gov/ncrfc
- Probabilistic Information - https://water.weather.gov/ahps2/long_range.php?wfo=dvn
- Midwest Regional Climate Center (MRCC) – <http://mrcc.isws.illinois.edu/>
- US Geological Survey (USGS) WaterWatch page – <http://waterwatch.usgs.gov>
- National Operational Hydrologic Remote Sensing Center (NOHRSC) – www.nohrsc.noaa.gov
- NOAA Climate Prediction Center – www.cpc.ncep.noaa.gov
- NOAA Weather Prediction Center – www.wpc.ncep.noaa.gov
- US Drought Monitor – droughtmonitor.unl.edu

The Spring Flood Outlook will be updated
February 24, 2022





Summary

2022 Spring Flood Outlook

Thursday, February 10, 2022

Main Points

- The threat for spring flooding across the region will be driven by the amounts, location, and frequency of spring precipitation, and to a lesser extent, the pace of the snowmelt.
- Snow cover and snow water equivalent are below normal across much of the area, which decreases the overall flood threat. However, the northern reaches of the Mississippi River basin are above normal. A rapid snowmelt there would increase the flood threat on the Mississippi River this spring.
- Abnormally dry to Moderate drought conditions and near to below normal soil moisture will reduce the flood risk as well as reduce the risk for long term flooding.
- River levels in the upper Mississippi watershed are currently running near normal, providing more capacity to handle heavy spring rains.

Flood Quick Facts and Preparedness:

Quick facts you should know about flooding:

- Flooding can be caused by heavy rain, rapid snow melt, coastal storms, storm surge, waterway overflow, ice jamming, levee overtopping, dam failure, or from wastewater systems.
- Flooding has occurred in every U.S. state and territory.
- It only takes 6 inches of fast-moving water to knock you off your feet.
- A car can be moved in as little as 2 feet of water.
- 90% of all U.S. natural disasters declared by the President involve flooding.

Preparedness:

Know your risk: Are you in a flood-prone area? Know your zone: www.fema.gov/flood-zones

-You must purchase separate flood insurance for your home. There is a 30 day wait period between when you buy a flood insurance policy and when it goes into effect. Plan ahead!

-A **Flood Watch** is issued when conditions are favorable for flooding. *Time to prepare!*

-A **Flood Warning** is issued when flooding is imminent or occurring. *Time to act!*

Never drive into flood waters! Turn around, don't drown!

Find out more information at: www.weather.gov/dvn/2022_springfloodoutlook

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